



**Centre of Marine Environmental Measurements
The First Institute of Oceanography, SOA**

Test Report

FIO (Ins) [2009] NO _____

Prepared for: Sunrui Corrosion and Fouling Control Company

Test samples: Samples of the Land-based Test Cycle 08

Test organization: Centre of Marine Environmental

Measurements, The First Institute of Oceanography, SOA

Ratifier: _____

Signing Date: _____

Address: 6 Xianxialing Road, Hi-Tech Industrial Park, Qingdao

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**Centre of Marine Environmental Measurements,
The First Institute of Oceanography, SOA
Test Report**

No: FIO (Ins) [2009] No. _____

Prepared for	Company: Sunrui Corrosion and Fouling Control Company		Contact: Liu Guangzhou, Ding Hui
	Address: 12A Jinhua Road, Qingdao		Tel: 0532-85827305, 13963952751, 15020029199.
	Arrival Date: 2009.11.09, 2009.11.14		Test Date: 2009.11.09, 2009.11.14
Sample	Description: Samples of the land-based test cycle 08 according to G8.		Note: 5 kinds of samples, separate samples were collected for each test item, and samples were collected in triplicate on each occasion.
	Label: Clear		Sample Condition: Colorless liquid, transparent or slightly turbid
	Receiver/ Sampler:	Sampling Date: 2009.11.09, 2009.11.14	
	Transfer bill No.:		

1 Received time and analysis time of samples

Table 1 Received time and analysis time of samples

Lot No.	Received time	Analysis time
20091109-TC08T-INF	2009.11.09 13:50	2009.11.09 14:10
20091109-TC08T-IAT	2009.11.09 13:50	2009.11.09 14:10
20091109-TC08C-INF	2009.11.09 13:50	2009.11.09 14:10
20091114-TC08T-DIS	2009.11.14 15:00	2009.11.14 15:15
20091114-TC08C-DIS	2009.11.14 15:00	2009.11.14 15:15

Analyst		Auditor		Ratifier	
Date		Date		Date	

2 Test items, methods , main instruments and analysts

Table 2 Test items, methods, main instruments and analysts

Items		Temp/ Hum	Standard	Method	Instrument/ Model	Analyst
Environmental Parameters	Temperature	13/60	GB 17378.4-2007	Thermometer	Thermometer	
	Salinity	25/60	GB 17378.4-2007	Salinometer Method	Salinometer	
	TSS	25/60	GB 17378.4-2007	Gravimetric Method	Analytical Balance	
	Dissolved Oxygen	25/60	GB 17378.4-2007	Winkler Method	Dissolved Oxygen Buret	
	pH	25/60	GB/T 12763.4-2007 GB 17378.4-2007	Acidmeter	pHS-3C Acidmeter	
	Turbidity	25/60	GB 17378.4-2007	Spectrophotometry	722 Spectrophoto- meter	
	POC	25/60	GB 17378.4-2007	Non-Dispersive Infra-Red Spectroscopy	Shimazu TOC-Vcph Analyser	
	DOC	25/60	GB/T 12763.4-2007 GB 17378.4-2007	Non-Dispersive Infra-Red Spectroscopy	Shimazu TOC-Vcph Aanalyser	
Organisms	Viable organisms greater than or equal to 50µm in minimum dimension	25/60	UNESCO Phytoplankton Manual; 21st Edition Standard Methods for the examination of water & wastewater, 2005 Centennial Edition. APHA, AWWA, WEF. Biological Examination (10000), 10200 Plankton; GB 17378.7 -2007	The method of Utermöhl Fluorescence microscopic counting	Inverted microscope AND Fluorescence microscope	
	Viable organisms greater than or equal to 10µm and less than 50µm in minimum dimension	25/60				

Items		Temp/ Hum	Standard	Method	Instrument/ Model	Analyst
Bacteria	Heterotrophic bacteria	36/58	GB/T 5750.12-2006	Plate count	Blood Counting Chamber, Inverted Microscope (TE200-U) and Constant-temperature Incubator (DNP-9082)	
	<i>Escherichia coli</i>	36/58	GB/T 5750.12-2006	MPN	Blood Counting Chamber, Inverted Microscope (TE200-U) and Constant-temperature Incubator (DNP-9082)	
	Intestinal <i>Enterococci</i>	36/58	SN/T 1933.1-2007	MPN	Blood Counting Chamber, Inverted Microscope (TE200-U) and Constant-temperature Incubator (DNP-9082)	
	<i>Vibrio cholerae</i> (serotypes O1 and O139)	36/58	WS289-2008; GB/T 4789.7-2008	Plate count	Blood Counting Chamber, Inverted Microscope (TE200-U) and Constant-temperature Incubator (DNP-9082)	

3 Results

3.1 Results of environmental parameter measurement

Table 3 Results of environmental parameter measurement of test cycle 08

Items	Unit	Lot No.				
		20091109-TC08T-INF	20091109-TC08T-IAT	20091109-TC08C-INF	20091114-TC08T-DIS	20091114-TC08C-DIS
Temperature	°C	16.2	15.6	16.0	9.6	9.0
Salinity	PSU	21.67	21.60	21.73	21.64	21.75
TSS	mg/L	103.00	9.80	155.00	25.00	66.11
Dissolved Oxygen	mg/L	8.92	10.58	8.95	8.37	6.88
pH		8.00	8.13	7.98	7.84	7.70
Turbidity	°	34.3	4.8	33.8	2.4	0.8
DOC	mg/L	6.41	5.07	6.08	3.81	2.29
POC	mg/L	5.67	3.50	5.04	0.94	1.77

3.2 Results of viable organisms analysis

Table 4 The results of viable organisms analysis

Viable Organisms	Lot No.				
	20091109-TC08T-INF	20091109-TC08T-IAT	20091109-TC08C-INF	20091114-TC08T-DIS	20091114-TC08C-DIS
greater than or equal to 50µm in minimum dimension, individuals per cubic meter	2.13×10^5	895	2.12×10^5	2	283
greater than or equal to 10µm and less than 50µm in minimum dimension, individuals per millilitre	4.64×10^3	1006	4.38×10^3	3	415

The influent water 20091109-TC08T-INF consists of 23 species of viable organisms greater than or equal to 50µm in minimum dimension from 4 different phyla/divisions, and 27 species of viable organisms greater than or equal to 10µm and less than 50µm in minimum dimension from 5 different phyla/divisions; The influent water 20091109-TC08C-INF consists of 22 species of viable organisms greater than or equal to 50µm in minimum dimension from 4 different phyla/divisions, and 26 species of viable organisms greater than or equal to 10µm and less than 50µm in minimum dimension from 5 different phyla/divisions. The details are shown in table 5.

Table 5 The species and the phyla/divisions of the viable organisms in the influent water of 20091109-TC08T-INF and 20091109-TC08C-INF

Lot No.	Viable Organisms	The biological classification of organisms		
		genus	species	phyla/divisions
20091109-TC08T-INF	greater than or equal to 50µm in minimum dimension	<i>Chaetoceros</i>	<i>curvisetus</i>	Bacillariophyta
		<i>Chaetoceros</i>	<i>lorenzianus</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>oculus-iridis</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>radiatus</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>jonesianus</i>	Bacillariophyta
		<i>Ditylum</i>	<i>brightwellii</i>	Bacillariophyta
		<i>Eucampia</i>	<i>zodiacus</i>	Bacillariophyta
		<i>Proboscia</i>	<i>alata</i>	Bacillariophyta
		<i>Detonula</i>	<i>pumila</i>	Bacillariophyta
		<i>Lauderia</i>	<i>annulata</i>	Bacillariophyta
		<i>Rhizosolenia</i>	<i>fragillissima</i>	Bacillariophyta
		<i>Odontella</i>	<i>regia</i>	Bacillariophyta
		<i>Pleurosigma</i>	<i>pelagicum</i>	Bacillariophyta
		<i>Thalassiosira</i>	<i>eccentrica</i>	Bacillariophyta
		<i>Thalassiosira</i>	<i>rotula</i>	Bacillariophyta
		<i>Ceratium</i>	<i>furca</i>	Pyrrophyta
		<i>Ceratium</i>	<i>tripos</i>	Pyrrophyta
		<i>Ceratium</i>	<i>kofoidii</i>	Pyrrophyta
		<i>Noctiluca</i>	<i>scientillans</i>	Pyrrophyta
		<i>Protoperidinium</i>	<i>conicum</i>	Pyrrophyta
		<i>Gyrodinium</i>	<i>spirale</i>	Pyrrophyta
<i>Dictyocha</i>	<i>speculum</i>	Chrysophyta		
<i>Calanus</i>	<i>sinicus</i>	Copepoda		

20091109-TC08T-INF	greater than or equal to 10µm and less than 50µm in minimum dimension	<i>Amphora</i>	<i>lineolata</i>	Bacillariophyta
		<i>Chaetoceros</i>	<i>curvisetus</i>	Bacillariophyta
		<i>Chaetoceros</i>	<i>lorenzianus</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>oculatus</i>	Bacillariophyta
		<i>Cylindrotheca</i>	<i>closterium</i>	Bacillariophyta
		<i>Eucampia</i>	<i>zodiacus</i>	Bacillariophyta
		<i>Skeletonema</i>	<i>costatum</i>	Bacillariophyta
		<i>Pleurosigma</i>	<i>affine</i>	Bacillariophyta
		<i>Paralia</i>	<i>sulcata</i>	Bacillariophyta
		<i>Pinnularia</i>	<i>borealis</i>	Bacillariophyta
		<i>Rhizosolenia</i>	<i>fragillissima</i>	Bacillariophyta
		<i>Pseudo-nitzschia</i>	<i>delicatissima</i>	Bacillariophyta
		<i>Pseudo-nitzschia</i>	<i>pungens</i>	Bacillariophyta
		<i>Thalassiosira</i>	<i>nordenskioldi</i>	Bacillariophyta
		<i>Leptocylindrus</i>	<i>danicus</i>	Bacillariophyta
		<i>Hemiaulus</i>	<i>hauckii</i>	Bacillariophyta
		<i>Ceratium</i>	<i>fuscus</i>	Pyrrophyta
		<i>Alexandrium</i>	<i>tamarense</i>	Pyrrophyta
		<i>Gyrodinium</i>	<i>spirale</i>	Pyrrophyta
		<i>Prorocentrum</i>	<i>minimum</i>	Pyrrophyta
		<i>Protoperdinium</i>	<i>conicum</i>	Pyrrophyta
		<i>Dictyocha</i>	<i>fibula</i>	Chrysophyta
		<i>Tetraselmis</i>	<i>chui</i>	Chlorophyta
		<i>Pyramidomonas</i>	sp.	Chlorophyta
		<i>Scenedesmus</i>	<i>quadricauda</i>	Chlorophyta
		<i>Tintinnopsis</i>	<i>radix</i>	Ciliata
<i>Tintinnopsis</i>	<i>büschlii</i>	Ciliata		

20091109- TC08C-INF	greater than or equal to 50µm in minimum dimension	<i>Chaetoceros</i>	<i>eibenii</i>	Bacillariophyta
		<i>Chaetoceros</i>	<i>curvisetus</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>oculatus</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>oculus-iridis</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>radiatus</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>jonesianus</i>	Bacillariophyta
		<i>Eucampia</i>	<i>zodiacus</i>	Bacillariophyta
		<i>Detonula</i>	<i>pumila</i>	Bacillariophyta
		<i>Pleurosigma</i>	<i>pelagicum</i>	Bacillariophyta
		<i>Rhizosolenia</i>	<i>steigera</i>	Bacillariophyta
		<i>Thalassiosira</i>	<i>eccentrica</i>	Bacillariophyta
		<i>Thalassiosira</i>	<i>rotula</i>	Bacillariophyta
		<i>Lauderia</i>	<i>annulata</i>	Bacillariophyta
		<i>Ceratium</i>	<i>furca</i>	Pyrrophyta
		<i>Ceratium</i>	<i>tripos</i>	Pyrrophyta
		<i>Ceratium</i>	<i>kofoidii</i>	Pyrrophyta
		<i>Noctiluca</i>	<i>scientillans</i>	Pyrrophyta
		<i>Protoperidinium</i>	<i>conicum</i>	Pyrrophyta
		<i>Alexandrium</i>	<i>tamarense</i>	Pyrrophyta
		<i>Gyrodinium</i>	<i>spirale</i>	Pyrrophyta
<i>Dictyocha</i>	<i>speculum</i>	Chrysophyta		
<i>Calanus</i>	<i>sinicus</i>	Copepoda		

20091109- TC08C-INF	greater than or equal to 10µm and less than 50µm in minimum dimension	<i>Chaetoceros</i>	<i>lorenzianus</i>	Bacillariophyta
		<i>Chaetoceros</i>	<i>curvisetus</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>radiatus</i>	Bacillariophyta
		<i>Coscinodiscus</i>	<i>oculatus</i>	Bacillariophyta
		<i>Cylindrotheca</i>	<i>closterium</i>	Bacillariophyta
		<i>Eucampia</i>	<i>zodiacus</i>	Bacillariophyta
		<i>Hemiaulus</i>	<i>hauckii</i>	Bacillariophyta
		<i>Leptocylindrus</i>	<i>danicus</i>	Bacillariophyta
		<i>Rhizosolenia</i>	<i>steigera</i>	Bacillariophyta
		<i>Skeletonema</i>	<i>costatum</i>	Bacillariophyta
		<i>Paralia</i>	<i>sulcata</i>	Bacillariophyta
		<i>Pinnularia</i>	<i>borealis</i>	Bacillariophyta
		<i>Pseudo-nitzschia</i>	<i>pungens</i>	Bacillariophyta
		<i>Thalassiosira</i>	<i>nordenskioldi</i>	Bacillariophyta
		<i>Thalassionema</i>	<i>nitzschioides</i>	Bacillariophyta
		<i>Thalassionema</i>	<i>frauenfeldii</i>	Bacillariophyta
		<i>Ceratium</i>	<i>fusus</i>	Pyrrophyta
		<i>Alexandrium</i>	<i>tamarense</i>	Pyrrophyta
		<i>Gyrodinium</i>	<i>spirale</i>	Pyrrophyta
		<i>Prorocentrum</i>	<i>minimum</i>	Pyrrophyta
		<i>Protoperidinium</i>	<i>conicum</i>	Pyrrophyta
		<i>Dictyocha</i>	<i>fibula</i>	Chrysophyta
		<i>Tetraselmis</i>	<i>chui</i>	Chlorophyta
<i>Pyramidomonas</i>	sp.	Chlorophyta		
<i>Tintinnopsis</i>	<i>radix</i>	Ciliata		
<i>Tintinnopsis</i>	<i>büschlii</i>	Ciliata		

3.3 Results of the viable bacteria analysis

Table 6 Results of the viable bacteria

Lot No.	Test Item			
	Heterotrophic bacteria (CFU/mL)	<i>Escherichia coli</i> (CFU/100ml)	Intestinal <i>Enterococci</i> (CFU/100ml)	<i>Vibrio cholerae</i> (serotypes O1 and O139) (CFU/100ml)
20091109-TC08T-INF	1.03×10^4	>1600	>1600	8
20091109-TC08T-IAT	20	14	<2	0
20091109-TC08C-INF	1.01×10^4	>1600	>1600	6
20091114-TC08T-DIS	13	2	<2	0
20091114-TC08C-DIS	3.30×10^3	1600	430	2

4 Conclusion

In test cycle 08, the test results showed that the performance of the influent water, treated water and control water met the requirements G8.

Editor		Auditor		Ratifier	
Date		Date		Date	